



Europäisches Patentamt
European Patent Office
Office européen des brevets



(11) Publication number: **0 272 432 B1**

(12)

EUROPEAN PATENT SPECIFICATION

(45) Date of publication of patent specification: 20.05.92 (51) Int. Cl.⁵: A23F 5/12, B65B 29/02

(21) Application number: 87116623.7

(22) Date of filing: 11.11.87

(54) Method for making a ground coffee discoid pad.

(30) Priority: 25.11.86 IT 2245686

(43) Date of publication of application:
29.06.88 Bulletin 88/26

(45) Publication of the grant of the patent:
20.05.92 Bulletin 92/21

(64) Designated Contracting States:
AT BE CH DE ES FR GB LI NL SE

(56) References cited:
EP-A- 0 006 175 EP-A- 0 144 623
DE-A- 1 692 235 DE-C- 388
GB-A- 1 189 011 US-A- 3 293 042

(73) Proprietor: ILLYCAFFE' S.p.A.
Via Flavia, 110
I-34147 Trieste(IT)

(72) Inventor: Illy, Ernesto
110, Via Flavia
I-34147 Trieste(IT)

(74) Representative: Ferralolo, Ruggero et al
Via Napo Torriani, 10
I-20124 Milano(IT)

EP 0 272 432 B1

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

Description

This present invention relates to a method for making a ground coffee discoid pad wrapped between two layers of water and air permeable material to brew an express coffee.

The applicant is the owner of the European Patent N° 006.175 which discloses a coffee discoid pad made up under a pressure not less of 1,5 MPa (15 atmospheres). Also a number of machines are known that carry out methods for making a coffee discoid pad. The applicant is also owner of the European patent application N° 84 112168.4-2308 which discloses a machine wherein a measure of ground coffee, delivered from a dispenser in a pocket formed in a web of suitable paper material, is subject to a first compression to form a coherent coffee pad and immediately after a pressure means definitively presses said pad while simultaneously rotates about its own longitudinal axis. The pressure that said pressure means applies to the coffee is not specified although the force applied to a discoid pad having a not specified diameter is mentioned.

The machine disclosed by the above European patent application makes a more or less compact discoid pad, depending on the pressure applied to the pressure means.

The drawback in the discoid pads subjected to pressures usual in the art, from few atmospheres up to 1 MPa (10 atmospheres), resides in that the dimensions are not constant and the compactness is not homogeneous, whilst in the case the discoid pad is subjected to pressures ranging from 1 to 1,8 MPa (10 to 18 atmospheres) said drawback is not present. A drawback common to all known discoid pads is that the coffee deteriorates after a certain time period even if the discoid pads are packed in a vacuum container. If, then, a lot of vacuum packed discoid pads get in touch with air after container opening and the lot consumption is not rapid, then the coffee spoiling is rapid. In fact, the air passage through the paper material layers that cover the coffee causes the latter being oxidated and the coffee beverage being not good.

The discoid pad as made by the invented method obviates said drawback.

The method for making a discoid pad of ground coffee comprises in a known way the steps of: forming a pocket in a lower web of water and air permeable material placed in a molding plate concavity, depositing a ground coffee measured heap in said pocket, squashing said heap to transform it into a coffee pad, applying a pressure to transform said coffee pad into a coherent well compacted element, covering said element with an upper web of a water and air permeable material and, finally, fixing one to the other said lower and upper webs

along the perimeter of said coffee element and comprises in a new way: applying to the coffee pad a maximum pressure such that the oily substances on and in the coffee granules fill up uniformly all the interstices between said granules in the whole coherent coffee element.

The maximum pressure as required to attain the above effect is determined experimentally for each coffee blend as prepared for making a lot of discoid pads. In fact said maximum pressure depends on the coffee quality, roasting stage, granulometry as provided by grinding, thickness of the pad, humidity degree in the ground coffee and said pressure will range from 2,2 to 6,4 MPa (22 to 65 atmospheres). From each lot of a certain coffee blend it is provided a certain quantity of coherent coffee elements or of coffee discoid pads that are subjected to pressure trials to determine the maximum required pressure.

The advantage with the invented method resides in that the oily substances, by permeating all the interstices between the single coffee granules, provide a space closed by a continuous oily surface substantially coincident with the peripheral surface of the coherent coffee element so that the oily particles on said continuous surface may oxidize on contact with the air passed through the permeable material covering said element, but work as a barrier against the oxidation proceeding towards the interior of the coherent element. Such a continuous oily surface allows a discoid pad to maintain its own aromatic properties much longer than a discoid pad produced by one of the known methods.

The invention is described in detail herebelow by means of an example and with reference to the drawings wherein:

FIG. 1 is a diagrammatic side elevation view of a pressure means which is operating on a coffee pad,

FIG. 2 is a cross section view of a discoid pad obtained by the invented method and

FIG. 3 is a cross section view of a conventional discoid pad.

Figure 1 shows a pressure means 1 applied on a ground coffee pad 2 that is placed in a pocket formed along a paper strip 3 in a concave receptacle in a lower plate 4' and has the upper peripheral part contained by an upper plate 4".

The ground coffee pad 2 is formed by a coffee blend of washed and non-washed arabic quality, coming from Africa and Latin America; the coffee is treated by discontinuous roasting by 13 minutes time; the granulometry as obtained by grinding is: at least 75% in weight having diameter less than 0.4 mm and from 20% to 55% in weight having diameter less than 0.1 mm; thickness 10 to 11 mm; humidity in the coffee after grinding: less than 1%.

The maximum pressure as applied, experimentally determined in order to have the whole pad permeated by oily substances, is about 4 MPa (40 Kg/sq.cm).

As disclosed by said European patent application N° 84. 112168.4-2308, the pressure means 1 is pressed on the upper surface of the coffee pad 2 when a pressurized fluid is delivered in the chamber 5 from a compressed air source 6, through a pressure reducing valve 7, along the duct 8. A pressure gauge 9 controls the air pressure. The shafts 10 and 11 of the pressure means 1 are coaxial and a thrust bearing 12 makes the shaft 11 free to rotate about axis I-I by a rack 13 meshing a gear 14 fixed to shaft 11, the means which move said rack being not shown. Shaft 11 is rotated while pressure means 1 presses the coffee pad 2, as explained in detail in said patent application. As conventional control means, not shown, discharge air from chamber 5 through a valve 15, the helical spring 16 lifts the pressure means 1. By reference number 17 guide means for shafts 10 and 11 are indicated.

Figure 2 shows a coffee discoid pad 20 produced by a pressure means that applies to the coffee pad 2 a maximum pressure of 4 MPa (40 Kg/sq.cm.) and shows that the oily substances fill up all the coffee pad, viz. all the part sectioned in the figure. It will be realized, consequently, that the conditions for this discoid pad, as far as air attack to coffee is concerned, are equivalent to the conditions of a coffee pad comprised in a space closed by a continuous surface 18 of oily substances. This surface 18 will be oxidized by air penetrating through the paper material 19, but will prevent from oxidation proceeding into the pad.

Figure 3 shows a coffee discoid pad 21 produced by applying to a coffee pad a pressure according to one of the known methods, lower than 22 atmospheres. Oily substances show having permeated the coffee in an irregular manner, discontinuous in the coffee pad 22. The parts 23 permeated by oily substances, shown by hatching in the figure, are in some regions spaced one from another and also present skin discontinuances 24 which allow air to penetrate the pad heart. It will be realized that such a discoid pad is subject to rapid spoiling. The paper material wrapping pad 22 to form discoid pad 21 is referred to by 25.

Claims

1. Method for making a ground coffee discoid pad (20) for brewing an express coffee comprising the steps of: forming a pocket in a lower web of water and air permeable material placed in a molding plate concavity, depositing a ground coffee measured heap in said pocket,

squashing said heap to transform it into a coffee pad (2), applying a pressure to transform said coffee pad into a coherent well compacted element, covering said element with an upper web of water and air permeable material and, finally, fixing one to the other said lower and upper webs along the perimeter of said coffee element, characterized in that the pressure for transforming said coffee pad (2) in a coherent well compacted element is driven up to a maximum pressure comprised from 2,2 Mpa (22 at) to 6,4 MPa (65 at) such that oily substances on and in the coffee granules uniformly fill up all the interstices between said granules providing a space closed by a continuous oily surface substantially coincident with the peripheral surface of the coherent coffee element.

2. Method according to claim 1 characterized in that a human or automatic analyzer examines at least a group of n coherent elements or discoid pads (20) all having same dimensions and compactness homogeneity and all being made with the same coffee blend having the same roasting stage, same granulometry and same humidity contents, each coherent element or discoid pad having been subjected to a maximum pressure, different from the other ones, ranging from 2,2 to 6,4 MPa (22 to 65 atmospheres) in order to recognize that one of the n maximum pressures that makes the interstices between said granules to be filled up by oily substances uniformly in the whole coffee coherent element.

Revendications

1. Méthode pour la préparation d'une pastille de café moulu en forme de disque (20) pour l'obtention d'un café express comprenant les étapes de la formation d'une poche dans un tissu inférieur en un matériau perméable à l'air et à l'eau disposé dans une concavité d'une plaque de moulage, le dépôt d'une masse mesurée de café moulu dans cette poche, le tassement de cette masse pour la transformer en une pastille de café (2), l'application d'une pression pour transformer cette pastille de café en un élément cohérent bien compacté, le recouvrement de cet élément avec un tissu supérieur en un matériau perméable à l'eau et à l'air et, finalement, la fixation l'un à l'autre des tissus respectivement inférieur et supérieur le long de la périphérie dudit élément de café, caractérisé en ce que la pression pour la transformation de ladite pastille de café (2) en un élément cohérent bien compacté est mise en

oeuvre jusqu'à une pression maximale comprise entre 2,2 MPa (22 atmosphères) et 6,4 MPa (65 atmosphères), de telle sorte que les substances huileuses sur et dans les granules de café remplissent de manière uniforme tous les interstices entre lesdits granules, fournissant ainsi un espace fermé par une surface huileuse coïncidant substantiellement avec la surface périphérique de l'élément de café cohérent.

2. Méthode selon la revendication 1, caractérisée en ce qu'un analyseur humain ou automatique examine au moins un groupe de n éléments cohérents ou pastilles en forme de disques (20) ayant tous les mêmes dimensions et la même homogénéité de compacité, et tous étant réalisés avec le même mélange de cafés ayant le même degré de torréfaction, la même granulométrie et la même teneur en humidité, chaque élément cohérent ou pastille en forme de disque ayant été soumis à une pression maximale, différente l'une de l'autre, comprise entre 2,2 et 6,4 MPa (22 et 65 atmosphères) afin de déterminer l'une des n pressions maximales qui permet aux interstices entre les granules d'être remplis par des substances huileuses de manière uniforme dans la totalité de l'élément de café cohérent.

Patentansprüche

1. Verfahren zum Herstellen einer scheibenförmigen Kaffeetablette gemahlene Kaffees (20) zum Brauen eines Expreßkaffees, welches die Schritte umfaßt: Ausbilden einer Tasche in einer unteren Bahn aus wasser- und luftdurchlässigem Material, welches in einer Formplattenausnehmung angeordnet wird, Einbringen einer gemessenen Menge gemahlene Kaffees in die genannte Tasche, Quetschen der genannten Menge, um sie zu einer Kaffeetablette (2) umzuformen, Aufbringen eines Druckes, um die genannte Kaffeetablette in ein kohärentes, gut verdichtetes Element umzuformen, Bedecken des genannten Elementes mit einer oberen Bahn aus wasser- und luftdurchlässigem Material und abschließendes Befestigen der genannten unteren und oberen Bahn aneinander entlang dem Umfang des genannten Kaffee-Elementes, dadurch gekennzeichnet, daß der Druck zum Umformen der genannten Kaffeetablette (2) in ein kohärentes gut verdichtetes Element auf einen zwischen 2,2 MPa (22 at) bis 6,4 MPa (65 at) enthaltenen Maximaldruck hinaufgetrieben wird, sodaß ölige Substanzen an und in den Kaffeekörnern alle Zwischenräume zwischen den genannten Körnern einheitlich auffüllen, wobei ein durch eine

kontinuierliche ölige Oberfläche, welche im wesentlichen koinzident mit der Umfangsoberfläche des kohärenten Kaffee-Elementes ist, geschlossener Raum erzielt wird.

2. Verfahren nach Anspruch 1, dadurch gekennzeichnet, daß ein menschlicher oder automatischer Analysierer mindestens eine Gruppe von n kohärenten Elementen oder scheibenförmigen Tabletten (20) überprüft, welche alle die gleichen Dimensionen und Kompaktheithomogenität aufweisen und welche alle mit der gleichen Kaffeemischung mit der gleichen Röstungsstufe, der gleichen Granulometrie und denselben Feuchtigkeitsgehalten hergestellt werden, wobei jedes kohärente Element oder jede scheibenförmige Tablette einem Maximaldruck, unterschiedlich von den anderen, in einem Bereich von 2,2 bis 6,4 MPa (22 bis 65 Atmosphären) unterworfen worden ist, um jenen einen der n Maximaldrücke zu erkennen, welcher die Zwischenräume zwischen den genannten Körnern veranlaßt, einheitlich im ganzen kohärenten Kaffee-Element durch ölige Substanzen aufgefüllt zu werden.

